Nail Stapler Nozzle

Field of Invention

The present invention relates to a nail stapler and, more particularly, to a nail stapler nozzle.

Background of Invention

A typical nail stapler includes a magazine for storing nails, a nozzle and a hammering device for driving the nails from the magazine through the nozzle one at a time. There is a certain nail stapler that includes a hammering device capable of hammering a nail times until it hammers the nail into an object completely. It however occurs quite often that when hammering the nail the second or third time, the hammering device hammers the next nail by mistake. This hammering by mistake causes jam in the nozzle. To clear the jam and reload the nails is troublesome.

The present invention is therefore intended to obviate or at least alleviate the problems encountered in prior art.

Summary of Invention

It is the primary objective of the present invention to provide a nail stapler including a magazine for storing nails, a jam-proof nozzle and a hammering device capable of hammering leading one of the nails times until it hammers the leading nail into an object completely.

According to the present invention, a nail stapler includes a magazine, a

nozzle and a hammering device. The magazine stores nails. The nozzle prevents jam via allowing only leading one of the nails to the hammering device. The hammering device is capable of hammering leading one of the nails more than once until it hammers the leading nail completely into an object.

Other objects, advantages, and novel features of the invention will become more apparent from the following detailed description when taken in conjunction with the attached drawings.

Brief Description of Drawings

The present invention will be described through detailed illustration of embodiments referring to the drawings.

Figure 1 is a right side view of a nail stapler including a magazine for storing nails, a jam-proof nozzle and a hammering device according to the preferred embodiment of the present invention.

Figure 2 is an exploded view of the magazine and the nozzle in Figure 1.

Figure 3 is a cross-sectional view of the nail stapler taken along a line 3-3 in Figure 1.

Figure 4 is an enlarged partial view of the nail stapler in Figure 3 but shows the nail stapler in another position.

Figure 5 is a cross-sectional view of the nail stapler taken along a line 5-5 in Figure 4.

Figure 6 is similar to Figure 4 but shows the nail stapler and a leading nail in another position.

Figure 7 is a cross-sectional view of the nail stapler taken along a line 7-7 in Figure 6.

Figure 8 is similar to Figure 6 but shows the nail stapler and the leading nail in another position.

Figure 9 is a cross-sectional view of the nail stapler taken along a line 9-9 in Figure 8.

Figure 10 is similar to Figure 8 but shows the nail stapler and the leading nail in another position.

Figure 11 is a cross-sectional view of the nail stapler taken along a line 11-11 in Figure 10.

Detailed Description of Preferred Embodiment

Referring to Figure 1, according to the preferred embodiment of the present invention, a nail stapler includes a magazine 10 for storing nails 3 shown in Figures 3 to 11, a jam-proof nozzle and a hammering device 1 capable of hammering leading one of the nails 3 more than once until it

hammers the leading nail 3 completely into an object such as those marked with "60" and "70" in Figures 4 to 11.

The hammering device 1 includes a trigger 2 and a hammer 4 shown in Figures 3 to 11. The hammering device 1 can be actuated via pulling the trigger 2 so as to move the hammer 4. The hammering device 1 will not further be illustrated in detail for being conventional.

Referring to Figure 2, the magazine 10 includes a space 12 between two walls (not numbered) so as to store the nails 3. A spring-biased pusher 11 is movable in the space 12 so as to push the nails 3 to the nozzle.

The nozzle includes a plate 20, a restraint 30, a security device 40 and a cover 50.

The plate 20 is attached to the magazine 10 by means of a screw 21. The plate 20 includes a slot 22 through which the nails 3 are transferred, a slot 23 near the slot 22, a cavity 24 in a front face thereof and a cavity 25 in communication with the cavity 24.

The restraint 30 includes a flat configuration. The restraint 30 includes two inclined slots 31, a recess 34 and at least one protrusion 36 projecting from an edge thereof.

The security device 40 includes a V-shaped body 47 and an arm 42 in a plane vertical to that of the V-shaped body 47. The V-shaped body 47

includes a first prong 45 and a second prong 46. A shoulder 41 is formed on the first prong 45. The arm 42 projects from the second prong 46.

The cover 50 includes two apertures 51.

Referring to Figure 3, to form the nozzle, the restraint 30 is put movably in the cavity 24. Two screws 32 are driven into the plate 20 through the inclined slots 31. Thus, the restraint 30 is movable along an inclined path in the cavity 24 between an upper left position and a lower right position. The protrusion 36 is located next to the slot 22.

The arm 42 is inserted through the slot 23 to a side of the magazine 10 for connection with elements (not numbered) for controlling the trigger 2. The security device 40 is movable along a vertical path between an upper position and a lower position relative to the plate 20. The slot 22 and the restraint 30 are put between the prongs 45 and 46. A spring 33 is put in the cavity 25 and compressed between the plate 20 and the restraint 30. A spring 35 is put in the recess 34 and compressed between the restraint 30 and the shoulder 41. The restraint 30 is moved to the lower right position because of the spring 33. The security device 40 is moved to the lower position because of the spring 35.

Referring to Figure 2, two screws 52 are driven into the plate 20 through the apertures 51. Thus, the plate 20, the restraint 30, the security device 40 and the cover 51 are kept together.

Referring to Figures 4 and 5, the security device 40 is put against the object 60 so that it is moved to the upper position. The restraint 30 is moved to the upper left position by means of the security device 40. As clearly shown in Figure 5, leading one of the nails 3 is put under the hammer 4. As clearly shown in Figure 4, next three of the nails 3 are pressed by means of the protrusion 36. The three next nails 3 cannot be pushed towards the hammer 4 by means of the spring-biased pusher 11. No nail 3 other than the leading nail 3 can be driven by means of the hammer 4. Hence, jam is prevented.

Referring to Figures 6 and 7, the leading nail 3 is driven into the object 60 via the hammer 4. Referring to Figures 8 and 9, the hammer 4 is returned to its original position. Referring to Figures 10 and 11, the leading nail 3 is driven further into the object 60 via the hammer 4. This process can repeat until the leading nail 3 is driven into the object 70 through the object 60. During this process, the next three nails 3 are pressed by means of the protrusion 36. The three next nails 3 cannot be pushed towards the hammer 4 by means of the spring-biased pusher 11. No nail 3 other than the leading nail 3 can be driven by means of the hammer 4. Hence, jam is prevented.

The security device 40 can be removed from the object 60. The restraint 30 is moved to the lower right position by means of the spring 33. The security device 40 is moved to the lower position by means of the spring 35. The next three nails 3 are released from the protrusion 36. The remaining nails 3 are pushed towards the hammer 4 via the spring-biased

pusher 11. The next nail 3 is put under the hammer 4. The next nail 3 can be driven by means of the hammer 4.

The present invention has been described through detailed illustration of the preferred embodiment. Those skilled in the art can derive variations from the preferred embodiment without departing from the scope of the present invention. Therefore, the preferred embodiment shall not limit the scope of the present invention defined in the claims.